

ORGANIZATION THEORY AND CORPORATE DECISIONS: SOME IMPLICATIONS FOR INDUSTRIAL LOCATION ANALYSIS

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Traditional industrial location theory has been justifiably criticized as being an inadequate tool for explaining actual locational decisions. A major problem is the usual assumption of an omniscient, rational economic man as the decision maker. A number of authors (for example [2, 5, 7]) have suggested that locational decisions instead depend on inertia, uncertainty, trial and error, reasoned or chance groupings of individuals in the firm, and other subjective factors that are difficult to measure. Despite studies that have ranked the major factors guiding the choice of location, relatively little exploration has been made of the people and processes behind such decisions. Accordingly, this study examines a set of actual locational choices with the intent of developing a realistic framework for viewing industrial location processes.

An initial framework for analyzing the uncertainty and sub-optimal behaviour prevalent in real-world industrial location decisions is presented in Figure 1. This is an adaptation of what Simon [4] calls a subjectively rational decision process, the result of bounded optimality, and it includes locational search and evaluation as a simple response to a specific problem. Behavioural studies of the theory of the firm [1] suggest that the spatial behaviour of organizations involves the analysis of conflicting perceptions and roles in the decision process, information searching and learning processes, and the choice of feasible alternatives. It is, therefore, anticipated that people involved in the industrial location decision influence the final choice to a varying degree as a result of their position within the organization, past experiences, and present perceptions.

Methodology: Case Studies

In depth post facto analysis of recent location decisions of firms with headquarters in Cincinnati was conducted through open-ended interviews. Since ranking of locational factors may bias people into believing that they should rank when they might not have done so in an actual decision, an open-ended interview was preferred.

The selection of firms was constrained for two reasons: their willingness to disclose records on recent locational decisions, and the willingness of the

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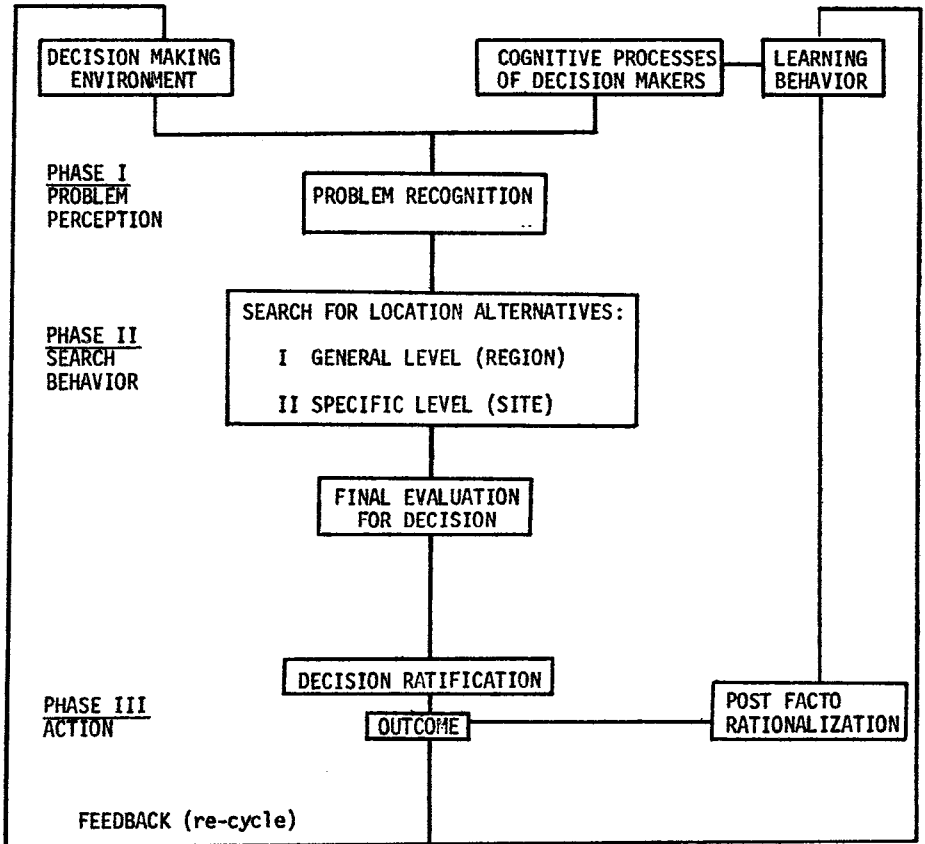


FIGURE 1: CONCEPTUAL MODEL OF LOCATION DECISION PROCESS.

decision makers (whether owners, members of boards of directors, or business managers) to candidly discuss the sequence of events that occurred.¹ The sample was further limited to firms which made locational decisions within the last ten years to increase the likelihood that the individuals participating in the decision would be still affiliated with the firms and would remember the sequence of events with some degree of precision. This resulted in fifteen case studies of relocation and branch plant location [3].

Interviewed persons were asked to relate the history of the locational choice from the instigation of the idea to the building of the plant. Any questions remaining unanswered on the sequence of the decision process, the use of consultants, locational motivations, and corporate goals were asked at the end so that the interview was only biased by what the decision makers themselves thought as important.

Empirical Findings

A rational but subjective process is evident in all the case studies. However, there are circumstantial differences that affect locational requirements, mainly the result of variations in type of manufacturing firm and whether the decision involved branch plant or relocation. These differences are reflected in a classification of interview responses on the basis of size, ownership, industrial type of firm, and type and sequence of decision. Table 1 presents a summary of the main characteristics of the decision process of large corporate organizations with multi-decision locational policies for new branch plants. Table 2 lists the attributes of branch plant decisions of smaller firms. Table 3 summarizes the characteristics of relocation decisions.

Unlike the large corporation of Table 1, the smaller firms of Tables 2 and 3 infrequently experience the problem of choosing a new plant site. Case study two located an average of one plant per year, whereas case nine took two years over a single decision and a relocation decision in case eleven took eight years. Thus, for a large organization, location is a more frequent, routine decision, whereas for a smaller organization with less experience the location decision is a more strategic problem. This suggests that a larger organization is more likely to choose a location on the basis of factors that proved successful in the past. Nevertheless, despite the existence of a location policy, large firms still face the problem of differing perceptions of locational factors and policies among key executives. Furthermore, the larger corporations also have the more difficult problem of fitting each new plant location into a complex system of already existing plants.

¹Selection was made from 271 "national and international firms with 100 plus employees in the Tri-State area," information supplied by the Cincinnati Chamber of Commerce.

1	Manufacturing	Laminates Division	Soaps, Food, Paper	Chemicals, Petroleum, Fibres	Shoes	Specialty Products Division	Machine Tools, Chemicals	Construction Materials	Men-Women Textiles	Concrete	Grain Merchants	Food	Industrial Packaging Products	Staplers	Litho-graphs	Electrical Equipment
2	Size: Plants	46	44	47	31	14	7	18	5	15	4	2	7	2	3	7
3	Employees	3520 in Cincinnati	36000 US	48000 US	14000	3000	7000	7	1200	190	115	400	700	800	250	340-400
4	Major Decision Makers	Centralized	Centralized	Centralized	Centralized	Centralized	Centralized	Centralized	Local	Regional	Regional	Local	National	Integral	Local	National
5	Decision Types	Branches	Branches	Branches	Branches	Branches	Branches	Branches	Branches	Branches	Branches	Branches	Branches	Branches	Branches	Branches
6	Decision Makers	Executive Committee	Senior V.P.	Senior V.P.	V.P. of Manuf.	V.P. of Treasury	V.P. of Manuf.	V.P. of Operations	Exec. Comm.	V.P. of Operations	Exec. Comm.	Exec. Comm.	Exec. Comm.	Exec. Comm.	Exec. Comm.	Exec. Comm.
7	Corporate Goals	"Survival, Capital Profit"	"Broad Growth, Public"	"Profitable Market"	"Universal Growth, Public"	"Growth Sales"	"Logical Expansion"	"Growth"	"Survival of the Fittest"	"Regional Growth"	"Regional Growth"	"Regional Growth"	"Regional Growth"	"Regional Growth"	"Regional Growth"	"Regional Growth"
8	Stimulus	1. Long Term Forecast	1. Increase Demand	1. Increase Demand	1. Increase Demand	1. Increase Demand	1. Increase Demand	1. Increase Demand	1. Increase Demand	1. Increase Demand	1. Increase Demand	1. Increase Demand	1. Increase Demand	1. Increase Demand	1. Increase Demand	1. Increase Demand
9	Internal Situation	1. Long Term Forecast	1. Increase Demand	1. Increase Demand	1. Increase Demand	1. Increase Demand	1. Increase Demand	1. Increase Demand	1. Increase Demand	1. Increase Demand	1. Increase Demand	1. Increase Demand	1. Increase Demand	1. Increase Demand	1. Increase Demand	1. Increase Demand
10	Search Process	Industrial Development	7 steps in Development	3 Steps	3 Steps	3 Steps	3 Steps	3 Steps	3 Steps	3 Steps	3 Steps	3 Steps	3 Steps	3 Steps	3 Steps	3 Steps
11	Location	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	As an Aid	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13	Consultants	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
14	Decision Aids	Linear Decision System	Linear Decision System	Linear Decision System	Linear Decision System	Linear Decision System	Linear Decision System	Linear Decision System	Linear Decision System	Linear Decision System	Linear Decision System	Linear Decision System	Linear Decision System	Linear Decision System	Linear Decision System	Linear Decision System
15	Copying Past Success	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
16	Final Choice	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
17	Retainers	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
18	Time taken Acquisition	7	Two Years	Two Years	Two Years	Two Years	Two Years	Two Years	Two Years	Two Years	Two Years	Two Years	Two Years	Two Years	Two Years	Two Years
19	Acquisition	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
20	Summary of Attributes	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

Table 1: Large Firm with Multi-Decision Policies for Branch Plants
 Table 2: Individual Branch Plant Decisions of Smaller Firms
 Table 3: Relocation Decisions
 Key: ? indicates lack of information; ** indicates respondents' description.

The primary stimulus for a locational decision was company growth, as reflected in the expansion of production and profit. The logic of the locational philosophy of case one was to insure the growth of profit. However, there were other reasons for setting up a plant such as inadequate space for in situ expansion and a potential market in other areas. The relocation studies of Table 3 form a special category because of the "forced" nature of some moves, the result of imminent growth pressures or the forces of urban renewal. For small companies the compulsory and immediate nature of the relocation decision generally resulted in the simple response of choosing from the earliest available alternatives. As an exception, case eleven procrastinated for eight years. In all the studies, the locational problem was brought to corporate attention by those most disadvantaged at the original location, predominantly sales, marketing, or manufacturing departments.

The search process of the firms can be generalized into a three-stage sequence. Many areas in the United States were immediately eliminated as being too impractical to even consider. The second stage involved a detailed investigation of certain areas as defined by the corporate needs. This included data analysis by the industrial development department of all firms in Table 1 and some visitations to specific areas. Particular concern was over the economic feasibility of alternate locations in cost terms. The third stage in the decision process involved the intense evaluation of a small group of likely alternatives for final selection.

This sequence is particularly characteristic of larger companies with past experience, a developed locational policy and mechanism, and ample time to choose a site. Case one used a decision tree costing approach whereas case three had a vigorous real estate department and land bank system through which land was continuously available for development. Case seven, however, deviates from this general sequential process by concentrating on one or two locations for very detailed analysis after a scant preliminary survey of numerous potential sites. By contrast, the relocating firms of Table 3 tended to adopt the first feasible location, but with a high risk of unsatisfactory conclusion.

The search process usually involved the establishment of a checklist of locational requirements prior to the final choice. Of the fifteen firms investigated, twelve actually wrote down a list of site needs; the remainder were smaller relocating firms. Smaller firms also tended to procrastinate longer than larger companies. The larger corporations of Table 1 tended to avoid uncertain situations, and the executives of these companies hardly ever refuted the suggestions of their trusted subordinates involved in the locational search. The locational search and decision was usually made at an intermediate echelon level by departmental or divisional managers with vested interests in the new plant location problem. For example, the decision for a shoe plant with high labor requirements in case four was the work of the personnel and manufacturing departments; the decision for a textile making branch plant in case eight was the responsibility of the president of the textile division; the decision of a canning firm with locational ties to specific customers was made by the sales department.²

²A comprehensive analysis of all case studies is given by Rees [3], pages 45-136.

The case studies suggest that in large organizations both the formal relationships (as depicted by official organization charts) and the informal relationships (as suggested by conditions mentioned in the interviews) are important variables in the decision process. Figure 2 shows a variety of people with different experiences to be involved at various stages in the decision process of case one. The fact that the decision was ratified at a high operating executive level, whereas the actual search and evaluation was made at a lower level in the corporate structure, suggests that position and power in that structure influences locational preference and choice.

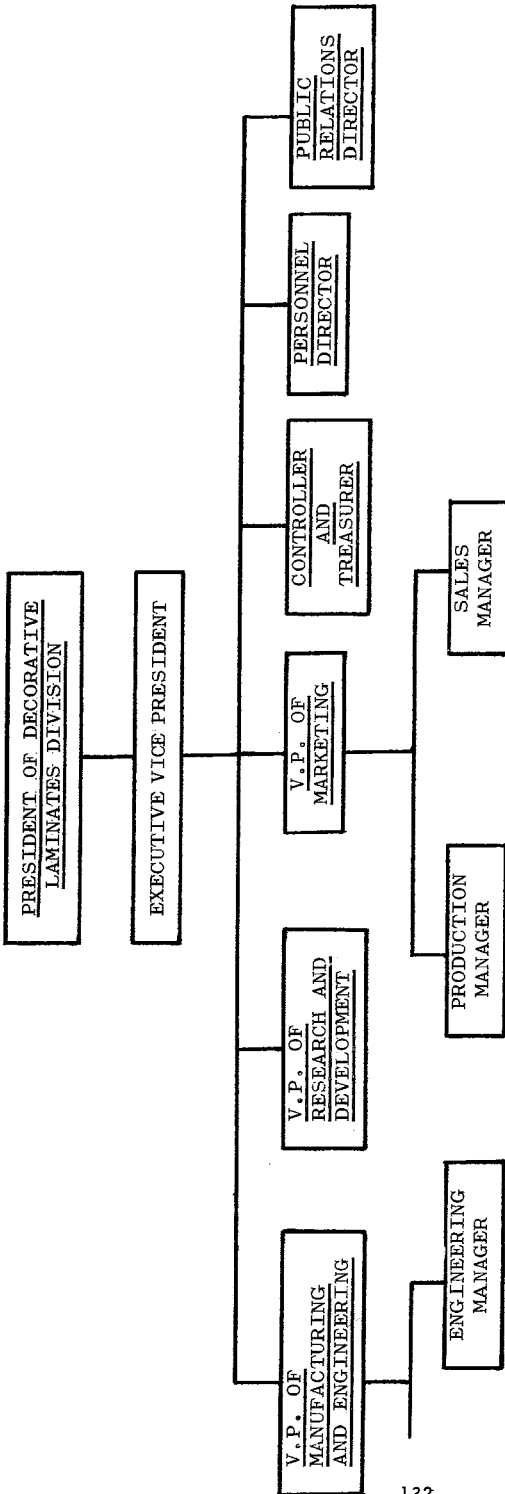
Subjective, non-financial, and judgmental criteria do exercise a major influence on the choice of a new location. Nevertheless, out of fifteen firms, nine used some form of quantitative technique, particularly linear programming and comparative cost methods, as an aid in evaluating alternative locations. This includes all of the larger firms in Table 1, five of which also searched for sites similar to those where they located successfully in the past.³

Significance of Research

A modification of the initial framework is proposed in Figure 3 as the result of empirical findings about industrial location decisions by large firms for branch plants. The decision now is seen as a response to market factors which can come on two levels. Branch plant establishment may be motivated by growth potential in a sales region, which can be regarded as an external stimulus to expand. Branch plant establishment also may be a response to the internal stimulus of capacity constraints at an existing location where output cannot meet demand and in situ expansion is impractical. In the latter case, in situ expansion probably is first considered; it is only when that action seems unreasonable in a long term context that a new plant is considered. As noted, however, large organizations that locate plants relatively often usually have formal long-term growth plans of which the location or expansion decision is merely a part, and these apply whether the stimulus for location is internal or external.

The decision makers simplify and order the uncertainties and vagaries to which they are exposed into a rational but subjective process, thus adapting the location problem to their own capabilities. This is usually done by making demand factors the prime determinate of the initial decision space. Further simplification occurs by choosing a few specific sites for detailed analysis. At this subregional scale, cost factors have precedence. This narrowing down process is reflected in Figure 3, where the search process is simplified to three levels: regional, community, and site. The resulting model appears to have bearing on the hitherto unresolved problem of combining a Weberian least cost approach and a Loschian maximum demand framework for explaining industrial location. Real world decision makers appear to resolve this problem on two levels: on the macro-regional scale the dominant response is one of demand

³These findings are similar to those of Townroe [6] on British Corporations.



Involvement in decision process:

1. Production Manager develops long range plan of investment, product and pricing strategies.
2. Approval of strategic plan by Executive Committee.
3. Conversion of plan to facilities plan by Engineering Manager.
4. Review and approval of facilities plan by Executive Committee.
5. Site selection by Engineering Department.
6. Review of site selection terms recommendations by Executive Committee.
7. To Corporate Headquarters for final approval.
(Positions underlined in corporate structure indicate members of Executive Committee.)

FIGURE 2: People involved in location decisions of Decorative Laminates Division, case 1.

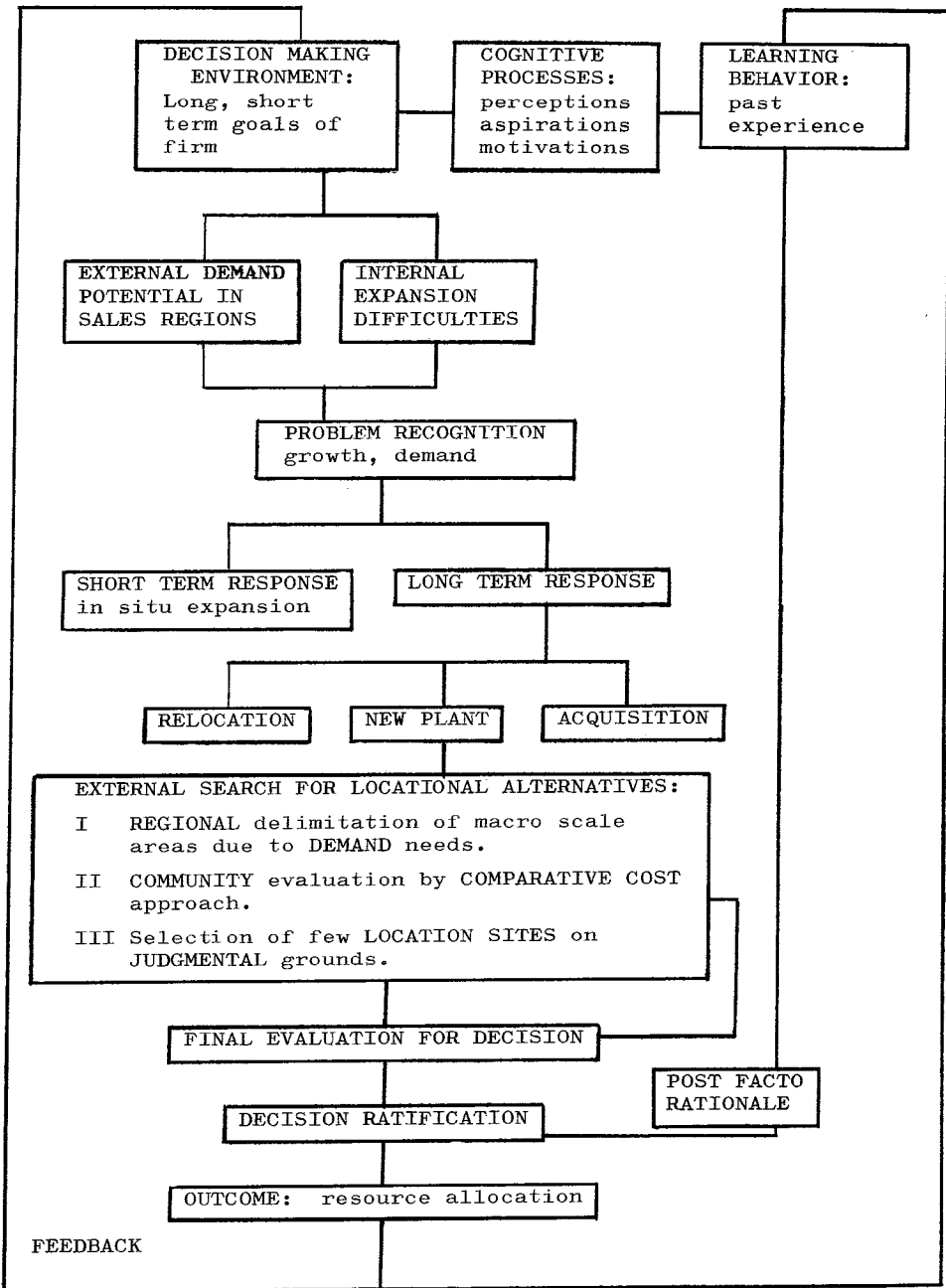


FIGURE 3 : EMPIRICAL MODEL OF INDUSTRIAL LOCATION DECISION PROCESS FOR A BRANCH PLANT OF A LARGE CORPORATION.

while ignoring cost; at the micro-site scale a location tends to be chosen on a comparative cost basis (which does not necessitate a least cost solution). Obviously, from such a small sample one cannot generalize that this is always the case, but the results encourage the postulation of this hypothesis for further study.

Despite the subjectivity and apparent ambiguity implied in the case studies, the location decision is based on logical development and not one of the firms investigated proved unable to rationalize its process of choice. To illustrate, the locational requirements of large firms and their organizational structures determine the people involved in the decision process. To these decision makers the new plant decision is a long term investment solution to the growth problem. In this long term issue, however, they can only rely on relatively short term projections through the aid of certain quantitative techniques. It is the dualism between these short term projections and long term uncertainty that makes the decision making process so judgmental rather than algorithmic. Such a heuristic decision, however, is rationally based on the logic of given arguments, indications of profit and growth, careful analysis of a number of potential location sites, and previous locational experiences.

Further research is planned to test the more general applicability of these conclusions to aggregate industrial patterns. The industrial location process will be simulated on the basis of regional demand projections, sub-regional comparative cost techniques, and measures of experiential factors to portray the narrowing down search process discussed above. It is hoped that this endeavor will facilitate the inclusion of descriptive, real world variables into the traditional normative framework of industrial location analysis.

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